



SEQUENCE LISTING

<120> Laub, Ruth
<120> Di Giambattista, Mario

<120> ANTIGENIC POLYPEPTIDE SEQUENCE OF FACTOR
VIII, FRAGMENTS AND/OR EPITOPEs OF THESE SEQUENCES

<130> VANMA48.001CP1

<140> US 09/853,080
<141> 2001-05-09

<150> US 08/765,837
<151> 1999-09-07

<150> PCT/BE95/00068
<151> 1995-07-14

<150> BE 940066
<151> 1994-07-14

<160> 49

<170> FastSEQ for Windows Version 4.0

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Factor VIII

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Tyr

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Factor VIII

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10

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Factor VIII

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Thr Asp Gly Ser Phe Thr Gln Pro Leu Tyr
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Factor VIII

<400> 4
Asn Gln Ala Ser Arg Pro Tyr Ser Phe
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<213> Homo sapiens

<220>
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Factor VIII

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Glu Asp Gln Arg Gln Gly Ala Glu Pro Arg Lys Asn Phe Val Lys Pro
1 5 10 15
Asn Glu Thr Lys Thr Tyr
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<210> 6
<211> 9
<212> PRT
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<220>
<223> epitope Met 1823 to Asp 1831 of A3 domain of
Factor VIII

<400> 6
Met Ala Pro Thr Lys Asp Glu Phe Asp
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<212> PRT
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<220>
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Factor VIII

<400> 7
Glu Thr Lys Ser Trp Tyr Phe
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Factor VIII

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1 5 10 15

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<212> PRT
<213> Homo sapiens

<220>
<223> epitope Asp 1909 to Arg 1917 of A3 domain of
Factor VIII

<400> 9
Asp Pro Thr Phe Lys Glu Asn Tyr Arg
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Factor VIII

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Ser Asn Lys Cys Gln Thr Pro Leu Gly Met Ala Ser Gly His
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VIII

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Ala Ser Glu Gly Ala Glu Tyr Asp Asp Gln Thr Ser Gln Arg Glu Lys
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Glu Asp Asp Lys Val
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<220>
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VIII

<400> 13
Asp Glu Gly Lys Ser Trp His Ser Glu Thr Lys Asn Ser Leu Met Gln
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Asp Arg Asp Ala Ala Ser Ala Arg Ala
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VIII

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Asp Ser Cys Pro Glu Glu Pro Gln Leu Arg Met Lys Asn Asn Glu Glu
1 5 10 15
Ala Glu Asp Tyr Asp Asp Asp Leu Thr Asp Ser Glu Met
20 25

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VIII

<400> 15
Asp Asp Arg Ser Tyr Lys Ser Gln Tyr Leu Asn Asn Gly Pro Gln Arg
1 5 10 15
Ile Gly Arg Lys Tyr Lys Lys
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Val Glu Asp Gly Pro Thr Lys Ser Asp Pro Arg
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VIII

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Tyr Lys Glu Ser Val Asp Gly Arg Gly Asn Gln

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VIII

<400> 18
His Asn Ser Asp Phe Arg Asn Arg Gly
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<210> 19
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VIII

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Leu Leu Ser Lys Asn Asn Ala Ile Glu Pro Arg Ser
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VIII

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Ser Asp Asp Pro Ser Gly Ala Ile Asp Ser Asn Asn Ser
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VIII

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<220>
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VIII

<400> 23
Tyr Ser Leu Asp Gly Lys Lys Trp Gln Thr Tyr Arg Gly Asn Ser Thr
1 5 10 15
Gly

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<212> PRT
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<223> epitope Asn 2128 to Asn 2138 of C domain of Factor
VIII

<400> 24
Asn Val Asp Ser Ser Gly Ile Lys His Asn
1 5 10

<210> 25
<211> 12
<212> PRT
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<220>
<223> epitope His 2152 to Arg 2163 of C domain of Factor

VIII

<400> 25
His Pro Thr His Tyr Ser Ile Arg Ser Thr Leu Arg
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<210> 26
<211> 17
<212> PRT
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<220>
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VIII

<400> 26
Ser Lys Ala Ile Ser Asp Ala Gln Ile Thr Ala Ser Ser Tyr Phe Thr
1 5 10 15
Asn

<210> 27
<211> 19
<212> PRT
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<220>
<223> epitope Ser 2204 to Gln 2222 of C domain of Factor
VIII

<400> 27
Ser Prc Ser Lys Ala Arg Leu His Leu Gln Gly Arg Ser Asn Ala Trp
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Arg Pro Gln

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<212> PRT
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<220>
<223> epitope Gln 2235 to Leu 2251 of C domain of Factor
VIII

<400> 28
Gln Lys Thr Met Lys Val Thr Gly Val Thr Thr Gln Gly Val Lys Ser
1 5 10 15
Leu

<210> 29
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<212> PRT
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<220>
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VIII

<400> 29
Gly Val Thr Thr Gln Gly Val Lys Ser Leu
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<210> 30
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<212> PRT
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<220>
<223> epitope Ile 2262 to Gln 2270 of C domain of Factor
VIII

<400> 30
Ile Ser Ser Ser Gln Asp Gly His Gln
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<210> 31
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<212> PRT
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<220>
<223> epitope Leu 2273 to Ser 2289 of C domain of Factor
VIII

<400> 31
Leu Phe Phe Gln Asn Gly Lys Val Lys Val Phe Gln Gly Asn Gln Asp
1 5 10 15
Ser

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<212> PRT
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VIII

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Pro Val Val Asn Ser Leu Asp Pro Pro Leu Leu Thr Arg Tyr

1

5

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<210> 33
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<212> PRT
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<223> epitope Glu 2322 to Tyr 2332 of C domain of Factor
VIII

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Glu Val Leu Gly Cys Glu Ala Gln Asp Leu Tyr
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<400> 34
Arg Asp Ile Thr
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Pro Tyr Ser Phe
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<400> 37
Glu Asp Gln
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<400> 38
Glu Asp Gln Arg Gln Gly Ala Glu Pro
1 5

<210> 39
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<400> 39
Gly Thr Lys Ser Trp Phe Thr
1 5

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<400> 40
Cys Arg Ala
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Asp Arg Asp Ala Ala Ser Ala Arg Ala
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<400> 42
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Asp Asp Arg Ser
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Ile His Gly Ile
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Tyr Ser Leu
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Phe Thr Asn
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Val Lys Ser Leu
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Thr Arg Tyr
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 1 5 10
 Trp Asp Tyr Met Gln Ser Asp Leu Gly Glu Leu Pro Val Asp Ala Arg
 15 20 25
 Phe Pro Pro Arg Val Pro Lys Ser Phe Pro Phe Asn Thr Ser Val Val
 30 35 40 45
 Tyr Lys Lys Thr Leu Phe Val Glu Phe Thr Asp His Leu Phe Asn Ile
 50 55 60
 Ala Lys Pro Arg Pro Pro Trp Met Gly Leu Leu Gly Pro Thr Ile Gln
 65 70 75
 Ala Glu Val Tyr Asp Thr Val Val Ile Thr Leu Lys Asn Met Ala Ser
 80 85 90
 His Pro Val Ser Leu His Ala Val Gly Val Ser Tyr Trp Lys Ala Ser
 95 100 105
 Glu Gly Ala Glu Tyr Asp Asp Gln Thr Ser Gln Arg Glu Lys Glu Asp
 110 115 120 125
 Asp Lys Val Phe Pro Gly Gly Ser His Thr Tyr Val Trp Gln Val Leu
 130 135 140
 Lys Glu Asn Gly Pro Met Ala Ser Asp Pro Leu Cys Leu Thr Tyr Ser
 145 150 155
 Tyr Leu Ser His Val Asp Leu Val Lys Asp Leu Asn Ser Gly Leu Ile
 160 165 170
 Gly Ala Leu Leu Val Cys Arg Glu Gly Ser Leu Ala Lys Glu Lys Thr
 175 180 185
 Gln Thr Leu His Lys Phe Ile Leu Leu Phe Ala Val Phe Asp Glu Gly
 190 195 200 205
 Lys Ser Trp His Ser Glu Thr Lys Asn Ser Leu Met Gln Asp Arg Asp
 210 215 220
 Ala Ala Ser Ala Arg Ala Trp Pro Lys Met His Thr Val Asn Gly Tyr
 225 230 235
 Val Asn Arg Ser Leu Pro Gly Leu Ile Gly Cys His Arg Lys Ser Val
 240 245 250
 Tyr Trp His Val Ile Gly Met Gly Thr Thr Pro Glu Val His Ser Ile
 255 260 265
 Phe Leu Glu Gly His Thr Phe Leu Val Arg Asn His Arg Gln Ala Ser
 270 275 280 285
 Leu Glu Ile Ser Pro Ile Thr Phe Leu Thr Ala Gln Thr Leu Leu Met
 290 295 300
 Asp Leu Gly Gln Phe Leu Leu Phe Cys His Ile Ser Ser His Gln His
 305 310 315
 Asp Gly Met Glu Ala Tyr Val Lys Val Asp Ser Cys Pro Glu Glu Pro

320	325	330
Gln Leu Arg Met Lys Asn Asn Glu Glu Ala Glu Asp Tyr Asp Asp Asp		
335	340	345
Leu Thr Asp Ser Glu Met Asp Val Val Arg Phe Asp Asp Asp Asn Ser		
350	355	360
Pro Ser Phe Ile Gln Ile Arg Ser Val Ala Lys Lys His Pro Lys Thr		
370	375	380
Trp Val His Tyr Ile Ala Ala Glu Glu Asp Trp Asp Tyr Ala Pro		
385	390	395
Leu Val Leu Ala Pro Asp Asp Arg Ser Tyr Lys Ser Gln Tyr Leu Asn		
400	405	410
Asn Gly Pro Gln Arg Ile Gly Arg Lys Tyr Lys Lys Val Arg Phe Met		
415	420	425
Ala Tyr Thr Asp Glu Thr Phe Lys Thr Arg Glu Ala Ile Gln His Glu		
430	435	440
Ser Gly Ile Leu Gly Pro Leu Leu Tyr Gly Glu Val Gly Asp Thr Leu		
450	455	460
Leu Ile Ile Phe Lys Asn Gln Ala Ser Arg Pro Tyr Asn Ile Tyr Pro		
465	470	475
His Gly Ile Thr Asp Val Arg Pro Leu Tyr Ser Arg Arg Leu Pro Lys		
480	485	490
Gly Val Lys His Leu Lys Asp Phe Pro Ile Leu Pro Gly Glu Ile Phe		
495	500	505
Lys Tyr Lys Trp Thr Val Thr Val Glu Asp Gly Pro Thr Lys Ser Asp		
510	515	520
Pro Arg Cys Leu Thr Arg Tyr Tyr Ser Ser Phe Val Asn Met Glu Arg		
530	535	540
Asp Leu Ala Ser Gly Leu Ile Gly Pro Leu Leu Ile Cys Tyr Lys Glu		
545	550	555
Ser Val Asp Gln Arg Gly Asn Gln Ile Met Ser Asp Lys Arg Asn Val		
560	565	570
Ile Leu Phe Ser Val Phe Asp Glu Asn Arg Ser Trp Tyr Leu Thr Glu		
575	580	585
Asn Ile Gln Arg Phe Leu Pro Asn Pro Ala Gly Val Gln Leu Glu Asp		
590	595	600
Pro Glu Phe Gln Ala Ser Asn Ile Met His Ser Ile Asn Gly Tyr Val		
610	615	620
Phe Asp Ser Leu Gln Leu Ser Val Cys Leu His Glu Val Ala Tyr Trp		
625	630	635
Tyr Ile Leu Ser Ile Gly Ala Gln Thr Asp Phe Leu Ser Val Phe Phe		
640	645	650
Ser Gly Tyr Thr Phe Lys His Lys Met Val Tyr Glu Asp Thr Leu Thr		
655	660	665
Leu Phe Pro Phe Ser Gly Glu Thr Val Phe Met Ser Met Glu Asn Pro		
670	675	680
Gly Leu Trp Ile Leu Gly Cys His Asn Ser Asp Phe Arg Asn Arg Gly		
690	695	700
Met Thr Ala Leu Leu Lys Val Ser Ser Cys Asp Lys Asn Thr Gly Asp		
705	710	715
Tyr Tyr Glu Asp Ser Tyr Glu Asp Ile Ser Ala Tyr Leu Leu Ser Lys		
720	725	730
Asn Asn Ala Ile Glu Pro Arg Ser Phe Ser Gln Asn Ser Arg His Pro		
735	740	745
Ser Thr Arg Gln Lys Gln Phe Asn Ala Thr Thr Ile Pro Glu Asn Asp		
750	755	760
		765

Ile Glu Lys Thr Asp Pro Trp Phe Ala His Arg Thr Pro Met Pro Lys
 770 775 780
 Ile Gln Asn Val Ser Ser Ser Asp Leu Leu Met Leu Leu Arg Gln Ser
 785 790 795
 Pro Thr Pro His Gly Leu Ser Leu Ser Asp Leu Gln Glu Ala Lys Tyr
 800 805 810
 Glu Thr Phe Ser Asp Asp Pro Ser Pro Gly Ala Ile Asp Ser Asn Asn
 815 820 825
 Ser Leu Ser Glu Met Thr His Phe Arg Pro Gln Leu His His Ser Gly
 830 835 840 845
 Asp Met Val Phe Thr Pro Glu Ser Gly Leu Gln Leu Arg Leu Asn Glu
 850 855 860
 Lys Leu Gly Thr Thr Ala Ala Thr Glu Leu Lys Lys Leu Asp Phe Lys
 865 870 875
 Val Ser Ser Thr Ser Asn Asn Leu Ile Ser Thr Ile Pro Ser Asp Asn
 880 885 890
 Leu Ala Ala Gly Thr Asp Asn Thr Ser Ser Leu Gly Pro Pro Ser Met
 895 900 905
 Pro Val His Tyr Asp Ser Gln Leu Asp Thr Thr Leu Phe Gly Lys Lys
 910 915 920 925
 Ser Ser Pro Leu Thr Glu Ser Gly Gly Pro Leu Ser Leu Ser Glu Glu
 930 935 940
 Asn Asn Asp Ser Lys Leu Leu Glu Ser Gly Leu Met Asn Ser Gln Glu
 945 950 955
 Ser Ser Trp Gly Lys Asn Val Ser Ser Thr Glu Ser Gly Arg Leu Phe
 960 965 970
 Lys Gly Lys Arg Ala His Gly Pro Ala Leu Leu Thr Lys Asp Asn Ala
 975 980 985
 Leu Phe Lys Val Ser Ile Ser Leu Leu Lys Thr Asn Lys Thr Ser Asn
 990 995 1000 1005
 Asn Ser Ala Thr Asn Arg Lys Thr His Ile Asp Gly Pro Ser Leu Leu
 1010 1015 1020
 Ile Glu Asn Ser Pro Ser Val Trp Gln Asn Ile Leu Glu Ser Asp Thr
 1025 1030 1035
 Glu Phe Lys Lys Val Thr Pro Leu Ile His Asp Arg Met Leu Met Asp
 1040 1045 1050
 Lys Asn Ala Thr Ala Leu Arg Leu Asn His Met Ser Asn Lys Thr Thr
 1055 1060 1065
 Ser Ser Lys Asn Met Glu Met Val Gln Gln Lys Lys Glu Gly Pro Ile
 1070 1075 1080 1085
 Pro Pro Asp Ala Gln Asn Pro Asp Met Ser Phe Phe Lys Met Leu Phe
 1090 1095 1100
 Leu Pro Glu Ser Ala Arg Trp Ile Gln Arg Thr His Gly Lys Asn Ser
 1105 1110 1115
 Leu Asn Ser Gly Gln Gly Pro Ser Pro Lys Gln Leu Val Ser Leu Gly
 1120 1125 1130
 Pro Glu Lys Ser Val Glu Gly Gln Asn Phe Leu Ser Glu Lys Asn Lys
 1135 1140 1145
 Val Val Val Gly Lys Gly Glu Phe Thr Lys Asp Val Gly Leu Lys Glu
 1150 1155 1160 1165
 Met Val Phe Pro Ser Ser Arg Asn Leu Phe Leu Thr Asn Leu Asp Asn
 1170 1175 1180
 Leu His Glu Asn Asn Thr His Asn Gln Glu Lys Lys Ile Gln Glu Glu
 1185 1190 1195
 Ile Glu Lys Lys Glu Thr Leu Ile Gln Glu Asn Val Val Leu Pro Gln

1200	1205	1210
Ile His Thr Val Thr Gly Thr Lys Asn Phe Met	Lys Asn Leu Phe Leu	
1215	1220	1225
Leu Ser Thr Arg Gln Asn Val Glu Gly Ser Tyr	Asp Gly Ala Tyr Ala	
1230	1235	1240
Pro Val Leu Gln Asp Phe Arg Ser Leu Asn Asp	Ser Thr Asn Arg Thr	1245
1250	1255	1260
Lys Lys His Thr Ala His Phe Ser Lys Lys Gly	Glu Glu Asn Leu	
1265	1270	1275
Glu Gly Leu Gly Asn Gln Thr Lys Gln Ile Val	Glu Lys Tyr Ala Cys	
1280	1285	1290
Thr Thr Arg Ile Ser Pro Asn Thr Ser Gln Gln	Asn Phe Val Thr Gln	
1295	1300	1305
Arg Ser Lys Arg Ala Leu Lys Gln Phe Arg	Leu Pro Leu Glu Glu Thr	
1310	1315	1320
Glu Leu Glu Lys Arg Ile Ile Val Asp Asp	Thr Ser Thr Gln Trp Ser	1325
1330	1335	1340
Lys Asn Met Lys His Leu Thr Pro Ser Thr Leu	Thr Gln Ile Asp Tyr	
1345	1350	1355
Asn Glu Lys Glu Lys Gly Ala Ile Thr Gln Ser	Pro Leu Ser Asp Cys	
1360	1365	1370
Leu Thr Arg Ser His Ser Ile Pro Gln Ala Asn	Arg Ser Pro Leu Pro	
1375	1380	1385
Ile Ala Lys Val Ser Ser Phe Pro Ser Ile Arg	Pro Ile Tyr Leu Thr	
1390	1395	1400
Arg Val Leu Phe Gln Asp Asn Ser Ser His	Leu Pro Ala Aia Ser Tyr	1405
1410	1415	1420
Arg Lys Lys Asp Ser Gly Val Gln Glu Ser Ser	His Phe Leu Gln Gly	
1425	1430	1435
Ala Lys Lys Asn Asn Leu Ser Leu Ala Ile Leu	Thr Leu Glu Met Thr	
1440	1445	1450
Gly Asp Gln Arg Glu Val Gly Ser Leu Gly	Ser Ala Thr Asn Ser	
1455	1460	1465
Val Thr Tyr Lys Lys Val Glu Asn Thr Val	Leu Pro Lys Pro Asp Leu	
1470	1475	1480
Pro Lys Thr Ser Gly Lys Val Glu Leu Leu	Pro Lys Val His Ile Tyr	1485
1490	1495	1500
Gln Lys Asp Leu Phe Pro Thr Glu Thr Ser Asn	Gly Ser Pro Gly His	
1505	1510	1515
Leu Asp Leu Val Glu Gly Ser Leu Leu Gln	Gly Thr Glu Gly Ala Ile	
1520	1525	1530
Lys Trp Asn Glu Ala Asn Arg Pro Gly Lys Val	Pro Phe Leu Arg Val	
1535	1540	1545
Ala Thr Glu Ser Ser Ala Lys Thr Pro Ser	Lys Leu Leu Asp Pro Leu	
1550	1555	1560
Ala Trp Asp Asn His Tyr Gly Thr Gln Ile Pro	Lys Glu Glu Trp Lys	1565
1570	1575	1580
Ser Gln Glu Lys Ser Pro Glu Lys Thr Ala Phe	Lys Lys Asp Thr	
1585	1590	1595
Ile Leu Ser Leu Asn Ala Cys Glu Ser Asn His	Ala Ile Ala Ala Ile	
1600	1605	1610
Asn Glu Gly Gln Asn Lys Pro Glu Ile Glu Val	Thr Trp Ala Lys Gln	
1615	1620	1625
Gly Arg Thr Glu Arg Leu Cys Ser Gln Asn Pro	Pro Pro Val Leu Lys Arg	
1630	1635	1640
		1645

His Gln Arg Glu Ile Thr Arg Thr Thr Leu Gln Ser Asp Gln Glu Glu
 1650 1655 1660
 Ile Asp Tyr Asp Asp Thr Ile Ser Val Glu Met Lys Lys Glu Asp Phe
 1665 1670 1675
 Asp Ile Tyr Asp Glu Asp Glu Asn Gln Ser Pro Arg Ser Phe Gln Lys
 1680 1685 1690
 Lys Thr Arg His Tyr Phe Ile Ala Ala Val Glu Arg Leu Trp Asp Tyr
 1695 1700 1705
 Gly Met Ser Ser Ser Pro His Val Leu Arg Asn Arg Ala Gln Ser Gly
 1710 1715 1720 1725
 Ser Val Pro Gln Phe Lys Lys Val Val Phe Gln Glu Phe Thr Asp Gly
 1730 1735 1740
 Ser Phe Thr Gln Pro Leu Tyr Arg Gly Glu Leu Asn Glu His Leu Gly
 1745 1750 1755
 Leu Leu Gly Pro Tyr Ile Arg Ala Glu Val Glu Asn Ile Met Val
 1760 1765 1770
 Thr Phe Arg Asn Gln Ala Ser Arg Pro Tyr Ser Phe Tyr Ser Ser Leu
 1775 1780 1785
 Ile Ser Tyr Glu Glu Asp Gln Arg Gln Gly Ala Glu Pro Arg Lys Asn
 1790 1795 1800 1805
 Phe Val Lys Pro Asn Glu Thr Lys Thr Tyr Phe Trp Lys Val Gln His
 1810 1815 1820
 His Met Ala Pro Thr Lys Asp Glu Phe Asp Cys Lys Ala Trp Ala Tyr
 1825 1830 1835
 Phe Ser Asp Val Asp Leu Glu Lys Asp Val His Ser Gly Leu Ile Gly
 1840 1845 1850
 Pro Leu Leu Val Cys His Thr Asn Thr Leu Asn Pro Ala His Gly Arg
 1855 1860 1865
 Gln Val Thr Val Gln Glu Phe Ala Leu Phe Phe Thr Ile Phe Asp Glu
 1870 1875 1880 1885
 Thr Lys Ser Trp Tyr Phe Thr Glu Asn Met Glu Arg Asn Cys Arg Ala
 1890 1895 1900
 Pro Cys Asn Ile Gln Met Glu Asp Pro Thr Phe Lys Glu Asn Tyr Arg
 1905 1910 1915
 Phe His Ala Ile Asn Gly Tyr Ile Met Asp Thr Leu Pro Gly Leu Val
 1920 1925 1930
 Met Ala Gln Asp Gln Arg Ile Arg Trp Tyr Leu Leu Ser Met Gly Ser
 1935 1940 1945
 Asn Glu Asn Ile His Ser Ile His Phe Ser Gly His Val Phe Thr Val
 1950 1955 1960 1965
 Arg Lys Lys Glu Glu Tyr Lys Met Ala Leu Tyr Asn Leu Tyr Pro Gly
 1970 1975 1980
 Val Phe Glu Thr Val Glu Met Leu Pro Ser Lys Ala Gly Ile Trp Arg
 1985 1990 1995
 Val Glu Cys Leu Ile Gly Glu His Leu His Ala Gly Met Ser Thr Leu
 2000 2005 2010
 Phe Leu Val Tyr Ser Asn Lys Cys Gln Thr Pro Leu Gly Met Ala Ser
 2015 2020 2025
 Gly His Ile Arg Asp Phe Gln Ile Thr Ala Ser Gly Gln Tyr Gly Gln
 2030 2035 2040 2045
 Trp Ala Pro Lys Leu Ala Arg Leu His Tyr Ser Gly Ser Ile Asn Ala
 2050 2055 2060
 Trp Ser Thr Lys Glu Pro Phe Ser Trp Ile Lys Val Asp Leu Leu Ala
 2065 2070 2075
 Pro Met Ile Ile His Gly Ile Lys Thr Gln Gly Ala Arg Gln Lys Phe

2080	2085	2090
Ser Ser Leu Tyr Ile Ser Gln Phe Ile Ile Met	Tyr Ser Leu Asp Gly	
2095	2100	2105
Lys Lys Trp Gln Thr Tyr Arg Gly Asn Ser Thr	Gly Thr Leu Met Val	
2110	2115	2120
Phe Phe Gly Asn Val Asp Ser Ser Gly Ile Lys His	Asn Ile Phe Asn	
2130	2135	2140
Pro Pro Ile Ile Ala Arg Tyr Ile Arg Leu His	Pro Thr His Tyr Ser	
2145	2150	2155
Ile Arg Ser Thr Leu Arg Met Glu Leu Met Gly Cys	Asp Leu Asn Ser	
2160	2165	2170
Cys Ser Met Pro Leu Gly Met Glu Ser Lys Ala Ile	Ser Asp Ala Gln	
2175	2180	2185
Ile Thr Ala Ser Ser Tyr Phe Thr Asn Met Phe Ala	Thr Trp Ser Pro	
2190	2195	2200
Ser Lys Ala Arg Leu His Leu Gln Gly Arg Ser Asn	Ala Trp Arg Pro	
2210	2215	2220
Gln Val Asn Asn Pro Lys Glu Trp Leu Gln Val Asp	Phe Gln Lys Thr	
2225	2230	2235
Met Lys Val Thr Gly Val Thr Thr Gln Gly Val Lys	Ser Leu Leu Thr	
2240	2245	2250
Ser Met Tyr Val Lys Glu Phe Leu Ile Ser Ser	Ser Gln Asp Gly His	
2255	2260	2265
Gln Trp Thr Leu Phe Phe Gln Asn Gly Lys Val Lys	Val Phe Gln Gly	
2270	2275	2280
Asn Gln Asp Ser Phe Thr Pro Val Val Asn Ser Leu	Asp Pro Pro Leu	
2290	2295	2300
Leu Thr Arg Tyr Leu Arg Ile His Pro Gln Ser Trp	Val His Gln Ile	
2305	2310	2315
Ala Leu Arg Met Glu Val Leu Gly Cys Glu Ala Gln	Asp Leu Tyr	
2320	2325	2330